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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,409	08/27/2003	Xiadong Mao	SONYP028	6558

25920 7590 02/04/2009

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ART UNIT	PAPER NUMBER
2614	

MAIL DATE	DELIVERY MODE
02/04/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/650,409	MAO, XIADONG	
	Examiner	Art Unit	
	JASON R. KURR	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-9,11-13 and 25-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-9,11-13 and 25-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7-9, 11-13 and 25-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al (US 7,206,418 B2) in view of Best (US 4,305,131).

With respect to claim 7, Yang discloses a method for reducing noise associated with an audio signal received through a microphone sensor array (fig.2 #210a-n) of a device (fig.1A #100a), comprising: detecting a target signal component and a noise signal component from at least two microphones integrated with the device (col.2 ln.15-22); enhancing the target signal component of the audio signal by executing a beam-forming operation performed through a first filter (fig.2 #214a, col.5 ln.8-21); blocking the target signal component by executing a reverse beam-forming operation through a second filter (fig.2 #214b, col.5 ln.22-37); aligning an output of the second filter through an adaptive filter (fig.3B #324b-n, col.6 ln.54-67, col.7 ln.1-5); combining an output of the first filter and an output of the adaptive filter so that noise signal component is reduced without distorting the target signal (col.7 ln.16-54); monitoring an acoustic set-up associated with the audio signal as a background process using the beam-forming operation of the first filter and the reverse beam-forming operation of the second filter to

track the target signal component (col.5 ln.38-51); and periodically setting a calibration of both a value of the first filter and a value of the second filter based upon the monitored acoustic set-up to actively steer the first filter and the second filter toward the target signal component (col.5 ln.52-61).

Yang does not disclose expressly wherein the method for reducing noise associated with an audio signal received through a microphone sensor array is meant to be established within a game controller during game play.

Best discloses a microphone sensor element (fig.2 #40) established within a game controller (fig.2 #41) for use during game play (col.6 ln.15-35).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the system of Yang in a video game controller and console as taught by Best. The motivation for doing so would have been to increase the intelligibility of voice commands spoken by a user of a video game for the purpose of controlling a function of the video game. The noise reduction system would allow for a user to continue playing a game with voice commands even in the event of interfering background noises.

With respect to claim 8, Yang discloses the method of claim 7 further comprising: defining the target signal component and a noise signal component through second order statistics (col.10 ln.52-67, col.11 ln.1-6).

With respect to claim 9, Yang discloses the method of claim 8, further comprising: separating the target signal component and the noise signal component;

and determining a time delay associated with each microphone sensor of the microphone senor array (col.5 ln.62-67, col.6 ln.1-7).

With respect to claim 11, Yang discloses the method of claim 7 in view of Brandstein, wherein the acoustic set-up refers to relative position of a user and the microphone sensor array (col.3 ln.10-20).

With respect to claim 12, Yang discloses the method of claim 7 in view of, however does not disclose expressly wherein the method operation of periodically calibrating occurs about every 100 milliseconds. Official Notice is taken that it is well known in the art to update filter parameters at significantly short time period so as to update the system with relevant data pertaining to constantly changing unknowns. At the time of the invention it would have been obvious to a person of ordinary skill in the art to update the beamformer of Brandstein about every 100 milliseconds instead of every instance of voice detection. The motivation for doing so would have been to account for any movement of the desired sound or of the sounds associated with noise.

With respect to claim 13, Yang discloses the method of claim 7, wherein the reverse beam-forming implements blind source separation using second order statistics associated with the audio signal to track and steer toward the target signal component (col.5 ln.22-37).

With respect to claim 25, Yang discloses a system capable of isolating a target audio signal from multiple noise sources during active use, comprising: a portable consumer device (fig.1A #100a) configured to move in positions that are independent from positions of a user during active use (col.1 ln.19-33); a computing device (fig.2

#200), the computing device including logic (col.14 ln.23-43) configured to enhance the target audio signal without constraining movement of the portable consumer device; the logic for enhancing the target audio signal using a beam-forming operation executed through a first filter (fig.2 #214a, col.5 ln.8-21), logic for blocking the target audio signal using a reverse beam-forming operation executed through a second filter (fig.2 #214b, col.5 ln.22-37), logic for aligning an output of the second filter through an adaptive filter (fig.3B #324b-n, col.6 ln.54-67, col.7 ln.1-5), logic for monitoring an acoustic set-up as a background process using the beam-forming operation of the first filter and the reverse beam-forming operation of the second filter to track a position of the target audio signal (col.5 ln.38-51), and logic for periodically setting a calibration of both the first filter and the second filter based upon the monitored acoustic set-up to actively steer the first and the second filter toward the position of the target audio signal (col.5 ln.52-61), and a microphone array (fig.2 #210a-n) affixed to the portable consumer device, the microphone array configured to capture audio signals, wherein a listening direction associated with the microphone array is actively adjusted during active use through the logic configured to enhance the target audio signal.

Yang does not disclose expressly wherein the logic is to be used during game play.

Best discloses a microphone sensor element (fig.2 #40) established within a game controller (fig.2 #41) for use during game play (col.6 ln.15-35).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the system of Yang in a video game controller and console as

taught by Best. The motivation for doing so would have been to increase the intelligibility of voice commands spoken by a user of a video game for the purpose of controlling a function of the video game. The noise reduction system would allow for a user to continue playing a game with voice commands even in the event of interfering background noises.

With respect to claim 26, Yang discloses the system of claim 25, wherein the computing device is in communication within the portable consumer device (fig.2).

With respect to claim 27, Yang discloses the system of claim 26, wherein the computing device includes, logic for combining the output of the first filter and the output of the second filter in a manner to reduce noise without distorting the target signal (col.7 ln.16-54).

With respect to claim 28, Yang discloses the system of claim 25, wherein the microphone array is configured in one of a convex geometry and a straight line geometry (fig.1A-C).

With respect to claim 29, Yang discloses the system of claim 25, wherein a distance between microphones of the microphone array is about 2.5 centimeters (col.14 ln.1-5).

With respect to claim 30, Yang discloses the system of claim 25 in view of Best, wherein the portable consumer device is a video game controller and the computing device is a video game console (Best: fig.2 #50).

With respect to claim 31, Yang discloses a system for enhancing a target signal, comprising: a microphone array (fig.2 #210a-n) affixed to a device (fig.1 #100a), the

microphone array configured to detect an audio signal that includes a target audio signal and noise (col.2 ln.15-22); a computing system (fig.2 #200) including circuitry configured to process the audio signal when received by the microphone array; the computing system including filtering and enhancing logic (col.14 ln.23-43) to filter the noise using a reverse beam-forming operation (col.5 ln.22-37) and enhance the target audio signal using a beam-forming operation (col.5 ln.8-21), monitoring logic using the beam-forming operation and the reverse beam-forming operation as a background process to monitor a change in position of the device relative to a position of a source of the target audio signal (col.5 ln.38-51), wherein the filtering of the noise and enhancing the target audio signal includes periodically setting a calibration to actively steer the filtering and enhancing logic toward the position of the source of the target audio signal (col.5 ln.52-61).

Yang does not disclose expressly wherein the microphone array is affixed to a video game controller.

Best discloses a microphone sensor (fig.2 #40) wherein the sensor lies within a video game controller (fig.2 #41).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the system of Yang in a video game controller and console as taught by Best. The motivation for doing so would have been to increase the intelligibility of voice commands spoken by a user of a video game for the purpose of controlling a function of the video game. The noise reduction system would allow for a

user to continue playing a game with voice commands even in the event of interfering background noises.

With respect to claim 32, Yang discloses the video game controller of claim 31, wherein the filtering and enhancing logic includes separation filter logic configured to separate the target audio signal from the noise through a blind source separation scheme (col.5 ln.8-37).

With respect to claim 33, Yang discloses the video game controller of claim 32, wherein the blind source separation scheme is associated with a second order statistic derived from data corresponding to the audio signal (col.10 ln.52-67, col.11 ln.1-6).

With respect to claim 34, Yang discloses the video game controller of claim 32, wherein the separation filter logic includes, adaptive array calibration logic to perform the periodic monitoring and calibration, the adaptive array calibration logic configured to calculate a separation filter value, the separation filter value capable of adjusting a listening direction associated with the microphone array (col.5 ln.38-61).

Response to Arguments

Applicant's arguments with respect to claims 7, 25 and 31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON R. KURR whose telephone number is (571)272-0552. The examiner can normally be reached on M-F 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (571) 273-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason R Kurr/
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614